Yanzhi Li

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RESEARCH INTEREST

I am broadly interested in networked and wireless systems, with a focus on internet measurement, digital communication, and the design of both traditional and ML-based network control algorithms to improve application performance.

EDUCATION

Ph.D. in Computer Science, GPA: 3.89/4.0 2021- Present
Northwestern University, Evanston, IL
Advisors: Prof. Igor Kadota and Prof. Aleksandar Kuzmanovic

B.A. (with Honors) in Computer Science and Physics, GPA: 3.81/4.0 2020
Earlham College, Richmond, IN

RESEARCH AND WORK EXPERIENCE

Northwestern University, Evanston, IL 2021 - Present
Research Assistant

- *Admission Control for 5G Network Slice with Predictive Capacity*
  - Developed a Predictive Network Reconfiguration (PNR) framework that uses historical data to predict the future condition of network links.
  - Developed near-optimal machine learning-based strategies for predictive network capacity modeling and resource allocation to network slice requests, maximizing the infrastructure provider's revenue in large-scale control systems.
  - Designed a robust, adaptive admission control framework for x-haul networks, incorporating reinforcement learning techniques for dynamic resource management and optimization in Software Defined Networks (SDN).

- *OpenAirInterface (OAI)-Based O-RAN Testbed Deployment*
  - Deployed an OpenAirInterface (OAI)-based O-RAN testbed to facilitate research and development in open radio access networks.
  - Enhanced stability of the testbed by improving the implementation of OAI.

- *Prigasus: Leveraging Semantic Cookies for Faster Page Loads and Enhanced Privacy in Online Advertising*
  - Proposed and developed Prigasus, a privacy-preserving online advertising system that improves web page performance by leveraging semantic cookies to accelerate personalized content delivery.
  - Investigated network optimization strategies to enhance QoS and QoE in multimedia settings.

- *Decentralized Applications Measurement*
  - Conducted extensive measurements of resource management and economic activity within popular decentralized cloud computing platforms and decentralized storage networks, such as the Golem Network and Storj.
  - Implemented a containerization solution for the Golem Network to streamline user onboarding and improve deployment efficiency.

- *DPDNS: Query Obfuscation for DNS Privacy Protection*
    - Designed a DNS client applying Local Differential Privacy, reducing susceptibility to tracking techniques by over 65% without compromising query performance.
    - Utilized data obfuscation on user DNS queries to protect privacy against user tracking techniques, including machine learning classifiers.

Earlham College, Richmond, IN 2017 - 2020
System Administrator

- Revamped the college's web infrastructure, leading to a 20% reduction in network bottlenecks and a 15% improvement in server response times through optimized WordPress and Django setups.
- Developed automation tools and scripts in Python with Selenium to streamline system operations and enhance user management processes.

Web Developer Internship May - August 2017

- Developed a customized web framework based on Django for campus website.
- Achieved a 15% enhancement in site reliability through strategic optimizations.

PUBLICATIONS

Yanzhi Li, Aleksandar Kuzmanovic:
Prigasus: Leveraging Semantic Cookies for Faster Page Loads and Enhanced Privacy in Online Advertising, In Submission

Yanzhi Li, Kyle Jung, Arthur Hu, Aleksandar Kuzmanovic:
DPDNS: Query Obfuscation for DNS Privacy Protection, In Submission

Yanzhi Li*, Yunming Xiao*, Matteo Varvello, Aleksandar Kuzmanovic:
Your Hardware On Sale By You, In Submission

Yanzhi Li, Dror Jacoby, Nicola Di Cicco, Igor Kadota:
Optimizing Admission Control in Network Slicing With Predictive Wireless Network, In Submission

Technical SKILLS

Programming:
Python, Java, C/C++, JavaScript, Shell, HTML, P4, LaTeX

Techniques/Knowledge:
Linux Kernel, AWS, Android, 5G, Apache, Nginx, Docker, DPDK, Machine Learning, Git, QUIC, Selenium, Kubernetes, Network Virtualization, CUDA

Services•

Sub-Reviewer: WWW (2022, 2023), ICDCS (2023), INFOCOM (2024)